

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

February / March 2023 Semester End Main Examinations

Programme: B.E.

Branch: MEDICAL ELECTRONICS ENGINEERING

Course Code: 19ML5PCTIE

Course: Therapeutic Instruments and Ethics

Semester: V

Duration: 3 hrs.

Max Marks: 100

Date: 23.02.2023

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

UNIT - I

- 1 a) Define pacing. Justify the need for an artificial pacemaker. **06**
- b) List the various types of pacemakers describing the functional characteristics. **06**
- c) Explain the working of synchronized DC defibrillator. **08**

UNIT - II

- 2 a) With block diagram, describe the solid state diathermy machine. **10**
- b) Explain various types of electro-surgery techniques commonly employed in practice. Also draw the waveforms generated by these techniques. **10**

UNIT - III

- 3 a) Draw block schematic diagram of a hemodialysis machine and examine the functions of each component incorporated in it. **10**
- b) With the need for heart-lung machine, discuss the functions for the same. **10**

OR

- 4 a) Enumerate indications for the need for haemodialysis therapy. **06**
- b) Discuss the six most commonly monitoring factors for the control of haemodialysis. **06**
- c) Enumerate the differences between bubble, disc and membrane type oxygenators. **08**

UNIT - IV

- 5 a) Discuss the classification of ventilators based on various methods. **10**
- b) Identify importance of following in respiratory assisted devices: **10**
 - i) Humidifier
 - ii) Nebulizer
 - iii) Aspirators.

OR

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

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|---|----|--|----|
| 6 | a) | Discuss the functions of a Ventilator. | 10 |
| | b) | Describe the electronic Intermittent Positive Pressure Breathing (IPPB) unit with monitoring for respiratory parameters. | 10 |

UNIT - V

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|---|----|--|----|
| 7 | a) | Identify the effects of ionizing radiation. | 06 |
| | b) | Summarize the effect of electrical current that occur with increasing current intensity on human body. | 08 |
| | c) | Describe the ethical issues arising from the use of biomedical instrumentation. | 06 |

B.M.S.C.E. - ODD SEM 2022-23